Translation

PCT Application
PCT/JP2003/007146

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

| | | |
|---|---|---|
| Applicant's or agent's file reference<br>PH-1823-PCT | FOR FURTHER ACTION | See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |
| International application No.<br>PCT/JP2003/007146 | International filing date (*day/month/year*)<br>05 June 2003 (05.06.2003) | Priority date (*day/month/year*)<br>05 June 2002 (05.06.2002) |
| International Patent Classification (IPC) or national classification and IPC<br>C12N 15/861 // C12N 5/10, 7/01 | | |
| Applicant | FUSO PHARMACEUTICAL INDUSTRIES, LTD. | |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

| | |
|---|---|
| Date of submission of the demand<br>05 June 2003 (05.06.2003) | Date of completion of this report<br>15 October 2003 (15.10.2003) |
| Name and mailing address of the IPEA/JP<br><br>Facsimile No. | Authorized officer<br><br>Telephone No. |

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/JP2003/007146

## I. Basis of the report

1. With regard to the elements of the international application:*

☒ the international application as originally filed

☐ the description:

pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the claims:

pages _____, as originally filed
pages _____, as amended (together with any statement under Article 19
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the drawings:

pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the sequence listing part of the description:

pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☒ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☒ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/JP03/07146

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

| | | | |
|---|---|---|---|
| Novelty (N) | Claims | 3-6, 8-21 | YES |
| | Claims | 1, 2, 7 | NO |
| Inventive step (IS) | Claims | | YES |
| | Claims | 1-21 | NO |
| Industrial applicability (IA) | Claims | 1-21 | YES |
| | Claims | | NO |

2. Citations and explanations

Document 1: WO 00/70071 A1 (CLUCELL HOLLAND BV) November 23, 2000
Document 2: WO 01/90392 A1 (SUMITOMO PHARMACEUTICALS CO., LTD.) November 29, 2001

1. Based on the description in document 1, the inventions of claims 1, 2 and 7 lack an inventive step.

Document 1 describes a type 35 adenovirus in a form in which all or part of the type 35 adenovirus E1 region has been deleted and the E1 protein is functionally lacking, and it describes a type 35 adenovirus vector into which a foreign gene has been inserted into the E1-deletion site as a foreign gene insertion site.

As a result, the inventions of claims 1, 2, and 7 are essentially one and the same as the invention described in document 1.

2. Based on the descriptions in documents 1 and 2 cited in the international search report, the inventions of claims 1-21 lack an inventive step.

Document 2 describes a recombinant adenovirus vector with reduced inflammation when administered *in vivo*, and in this adenovirus vector the E1A and E2A genes are deleted and part or all of the E3 gene may also be deleted. It also describes the insertion of a foreign gene into the deletion site of the E1A or E1B gene of this adenovirus vector from which the E1 region has been deleted. In addition, as a process for producing the adenovirus vector from which the E1 region has been deleted, it describes a method whereby this vector infects and propagates within cells that express the adenovirus E1 and E4 proteins, the propagated vector is collected, and mammalian cells are then infected with the adenovirus vector from which the E1 region has been deleted.

The invention described in document 1 above was prepared during the process of research and development for the purpose of providing a useful vector in the field of gene therapy.

This being the case, this examination finds that because the invention described n document 2 is also one that is used in gene therapy, persons skilled in the art can easily conceive of applying the type 35 adenovirus as the adenovirus in the invention described in document 2.

In addition, because the base sequence of the type 35 adenovirus genome (including the regional classifications such as E1, E3, etc.) was described in document 1, it was already publicly known on the priority date of this application. Therefore, this examination finds no particular difficulty is involved in determining which base sequence portion of the adenovirus genome is to be deleted to delete the E1 and E3 regions.

**Supplemental Box**
(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of Box V:

Moreover, as described on page 8, lines 9 to 3 from the bottom in the Specification of this application, it was already publicly known on the priority date of this application that type 35 adenovirus has a high affinity to human CD34 positive cells. Therefore, this examination finds that persons skilled in the art can easily conceive of selecting CD34 positive cells as the target cells to be infected by the inventive type 35 adenovirus vector in this application.